We claim:

1. A process for improving the brilliance of color and the stability of a colored polymer system, which is composed of a matrix and of discrete polymer particles distributed in accordance with a defined spatial lattice structure in the matrix, and which is obtained by filming of an emulsion polymer with core/shell structure, which comprises

   - using an emulsion polymer obtainable by
   - polymerizing monomers in at least one first stage (core monomers),
   - then polymerizing monomers in at least one further, second stage (transition stage), and
   - finally polymerizing monomers in a third stage (shell monomers),

   where, based on the percentage constitution of the monomer mixtures of the three stages, at most 30% by weight of the monomers of the first stage are identical with those of the third stage, and 5% of the monomers of the second stage are identical with, respectively, those of the first and those of the third stage, and not more than 60% by weight of the monomers of the 2nd stage here are monomers absent in the 1st stage and also absent in the 3rd stage.

2. A process as claimed in claim 1, wherein the polymer particles of the colored polymer system comprise one or more types of particle with a median particle diameter in the range from 0.05 to 5 µm, where, however, each type of particle has a polydispersity index (PI) smaller than 0.6, calculated from the formula

$$PI = (D_{90}-D_{10})/D_{50}$$

   where D_{90}, D_{10}, and D_{50} are particle diameters for which the following apply:

   D_{90}: 90% by weight of the total weight of all of the particles have a particle diameter smaller than or equal to D_{90}

   D_{50}: 50% by weight of the total weight of all of the particles have a particle diameter smaller than or equal to D_{50}

   D_{10}: 10% by weight of the total weight of all of the particles have a particle diameter smaller than or equal to D_{10}

3. A process as claimed in claim 1 or 2, wherein the polymer particles of the colored polymer system comprise one type of particle.

4. A process as claimed in any of claims 1 to 3, wherein the entirety of the emulsion polymer is composed of at least 40% by weight of what are known as main monomers, selected from C_1-C_{20}-alkyl (meth)acrylates, vinyl esters of carboxylic acids which contain up to 20 carbon atoms, vinylaromatics having up to 20 carbon atoms, ethylenically unsaturated nitriles, vinyl halides, vinyl ethers of alcohols which contain from 1 to 10 carbon atoms, aliphatic hydrocarbons having from 2 to 8 carbon atoms and one or two double bonds, or mixtures of these monomers.

5. A process as claimed in any of claims 1 to 4, wherein the polymer particles of the colored polymer system and the matrix differ in refractive index.

6. A process as claimed in any of claims 1 to 5, wherein the difference in refractive index is at least 0.01, in particular at least 0.1.

7. A process as claimed in any of claims 1 to 6, wherein the polydispersity index of the discrete polymer particles is smaller than 0.45.

8. A process as claimed in any of claims 1 to 7, wherein the core of the emulsion polymer has been crosslinked.

9. A process as claimed in any of claims 1 to 8, wherein the core-to-shell weight ratio in the emulsion polymer is from 1:0.05 to 1:20.

10. A process as claimed in any of claims 1 to 9, wherein the distance between the discrete polymer particles of the colored polymer layer is from 20 to 50 000 nanometers.

11. A process as claimed in any of claims 1 to 10, wherein a transparent polymer layer is applied to the colored polymer system.

12. A process as claimed in any of claims 1 to 11, wherein the entirety of the polymer of the transparent layer is composed of at least 40% by weight of what are known as main monomers, selected from C_1-C_{20}-alkyl (meth)acrylates, vinyl esters of carboxylic acids which contain up to 20 carbon atoms, vinylaromatics having up to 20 carbon atoms, ethylenically unsaturated nitriles, vinyl halides, vinyl ethers of alcohols which contain from 1 to 10 carbon atoms, aliphatic hydrocarbons having from 2 to 8 carbon atoms and one or two double bonds, or mixtures of these monomers.

13. A process as claimed in any of claims 1 to 12, wherein the polymer of the transparent layer is an emulsion polymer.

14. A process as claimed in claim 13, wherein the emulsion polymer has a ponderal median particle diameter of from 10 to 500 nm, preferably from 30 to 200 nm.

15. A process as claimed in any of claims 1 to 14, wherein the polymer of the transparent layer is applied in the form of a solution or dispersion to the colored layer, and a drying process then takes place.

16. A process as claimed in any of claims 1 to 15, wherein the thickness of the transparent layer is from 0.2 to 500 µm.

17. A process for improving the brilliance of color and the stability of a colored polymer system, which is composed of a matrix and of discrete polymer particles distributed in accordance with a defined spatial lattice structure in the matrix, which comprises heating the colored polymer system and, where appropriate, the transparent polymer layer to temperatures above 60°C.

18. A colored polymer system, obtainable by a process as claimed in any of claims 1 to 17.

19. The use of a colored polymer system as claimed in any of claims 1 to 18 as, or in, coating composition(s), e.g. for the coating of plastics, plastics films, paper, packaging, etc., or in visual displays where the color of the polymer layer changes.